MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XXII, Number 1
March 3, 1934

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE BUILDERS OF MEXICO CITY

When the Spaniards, under Cortez, advanced upon the City of Mexico, they expected to see a savage people; instead they found a community of cultured people living in a beautiful town with paved streets, broad market places and a plaza surrounded with palaces and temples. The Aztecs had builded well, and the Spaniards had reason to be astounded.

The ancestors of the builders of the city had come from the north. By A.D. 1325 many of them were living among the tribes around Lake Tezcoco. The newcomers worked with the strangers, and, in time, became friends, and located upon two small islands in the swampy lake.

But life here was miserable. The water was brackish and unfit to drink. The name "Aztec" means "place of the herons" or "heron people" and no doubt this was most suitable, for they lived as the herons were living—among the reeds.

Twenty-five years after reaching the islands, the Aztecs secured the right to use the water of the spring at Chapultepec, "The Hill of the Grasshoppers." This was a most important step. Soon several frames of wattlework were sunk in the lake and filled with dirt. Thus new land was added. The village grew into a town with terra cotta water mains bringing fresh water from the spring. Causeways connected the growing community with the shore. In honor of one of their gods, the Aztecs called the rapidly developing center, "Tenochtitlan."

The town was divided into wards, or "colpolli." Each had its protective gods and its large meeting place in which were kept the weapons and armor of the warriors. Here, too, the youth were trained to be soldiers. All Aztec men were warriors except the priests. They were ranked according to their deeds in war. Should a lad desire to follow the life of a priest he received special training in the temples.

To each family was allotted a piece of land. It belonged to that family just so long as it was worked. If for some reason, it was not made to produce its crop of maize and chili, it again became the property of the state. There were also sections of land which were worked by all the common people, for the benefit of the state and temples.

The temples were the centers of all Aztec life. No work was begun until some god had been addressed and offerings made. These gods were many. Some had control of earth forces and sky forces, while others were household deities. No seeds were placed in the dirt until

the priests had been consulted regarding the proper time. Even the planting of maize was a ceremony. It is thought that maize, or corn, was first cultivated in the Highlands of Mexico, where a possible wild ancestor is to be found in a plant to which the Aztecs gave the name, "Teocentli" or "maize of the gods."

Other plants raised were beans, squash, sweet potatoes and tomatoes. The cacao of the lowlands was brought to the highlands and traded for things raised on the cooler plateau. Cacao was not so much desired for the bean from which chocolate was made as for its use as money. Chocolate, as a drink, was seldom served except in the homes of the rich. It was beaten with a swizzle stick and served with spices and maize. The Spaniards were surprised at the great number of cups of frothing chocolate which the ruler, Montezuma, was served each day. Our words, cacao, chocolate, tomato and aguacate are Aztec words.

The original inhabitants of Mexico City had no beasts of burden and the dog was the only domesticated animal. These were raised in large numbers. Great flocks of turkeys were kept, and in many places, the Aztecs had small, stingless bees in hives made of sections of tree trunks. Honey was used as sugar. Certain plants, like black mushrooms, were eaten with honey before certain ceremonial feasts. The mixture was supposed to cause visions.

The Aztec women spent most of their time in cooking the tortillas and tamales which were made from ground maize boiled with lime. It was then kneaded in a metate and made into a dough. These two foods are still the chief mainstay of most Mexicans. Some cotton was imported from the lowlands and made into garments for the well-to-do. Many colors were used and designs were embroidered in cotton thread or made by sewing on feathers arranged in attractive patterns. Maguey fiber was used for the clothing of the poorer people, also for mats, sandals and bags. Jewelry was made of obsidian, turquoise, jade, copper and gold.

Rich indeed was the loot which the Spaniards procured in this community, which the Aztecs had developed from rank, reedy islands into one of the most beautiful of ancient American cities.

MARGARET M. CORNELL, Guide-lecturer

Note: In Hall 8 will be seen many interesting Aztec objects.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

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STEPHEN C. SIMMS, Director

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FIELD MUSEUM OF
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

SUGARS OF MANY KINDS

The first collectors and makers of sugar were, no doubt, the bees. They gathered nectar from flowers and made it into honey long before any people knew of sugar.

All plants have some sugar in them. Often it is stored in the roots, stems or fruits. The plant manufactures this food in the green leaves from water and carbon dioxide with the aid of sunshine. The sugar is soluble in the plant juices and serves as nourishment for the plant. The surplus is changed into starch and as such is stored for future use in roots and tubers.

All fruits contain at least two kinds of sugar. The apple, pineapple, strawberry and watermelon are especially rich in sugars. Grapes contain a certain kind of sugar which is particularly useful for people with the disease, diabetes. Raisins, dates, prunes and figs are noted for their sugar.

For a long time man was probably satisfied to rob the combs of the honey bees for sugar. Then he learned to obtain it by extracting and boiling down the sweet juice of certain plants, foremost of which is the sugar cane. No one knows whether this happened in India or China or how long ago. Sugar is a Persian word and comes from the Sanskrit word "shahara" or "sarkara" meaning "small grains." Theophrastus later spoke of it as "honey which is from bamboo." Sugar was not used as food then. People regarded it as a sort of curiosity and presented it to royalty. Then it became important as a medicine. Later it gained in popularity, seemed to lose its medicinal properties and was considered a delicious food luxury indulged in only at special feasts.

Today sugar is a necessity. The two most important plants from which we get our present supply are the sugar cane and sugar beet. Men have learned to crush the sugar beets and cane stalks to free the juice which is treated and changed into crystallized sugar.

There are other sources of sugar limited to small localities where produced. Take, for instance, the palm sugars made especially from the Nipa and wild date palms. Natives in certain tropical lands have used palm sugar for many years. They squeeze and beat the soft, unopened flower bud of the sugar palm and then cut off the very tip of the bud. A clean bamboo vessel is tied over the bud end to catch the sap as it trickles out.

In India the stems of the wild date palms are tapped. During the months of November to March notches are cut in the trees in the evening and vessels are hung to catch the sap during the night. The sun dries the notches and so the sap does not run during the day. The sap must be boiled and treated immediately before it ferments. When boiled to a thick molasses it is called "gur" and when crystallized into sugar "jaggery."

Maple sugar is an American product and was first made by the American Indians. They had used it long before the white man came. According to one of their legends, an Indian squaw discovered this sugar one day as she was cooking moose meat. Instead of going to the far-off spring for water she collected enough sap from a maple tree to cover the meat. As she gossiped with her neighbors her meat boiled dry and was left covered with a sticky, brown mass. The Indian men disregarded the meat as they licked their sticky fingers and asked for more of the brown mass. From that time onward, so the story goes, the Indian women tapped the maple trees, collected the sap and boiled it until it crystallized into maple sugar. The white people learned to do the same thing from the Indians. Even today the Menomini Indians flavor their meat with maple sugar instead of salt.

Maple sugar is still being made in the United States, especially in the northeastern woods. Many generations ago this sugar was considered a necessity among the colonists. White sugar was a luxury bought in Boston at 75 cents per pound. It came in large white cones which were used only on special occasions. Today white sugar is common and maple sugar the luxury.

People have grown so accustomed to sugar that great quantities are demanded and produced. Cane sugar and beet sugar lead all the rest in this useful food.

MIRIAM WOOD, Guide-lecturer

Note: Sugar exhibits may be found in Halls 25 and 29. Implements used by the Indians in making maple sugar are in Hall 4.

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STEPHEN C. SIMMS, Director

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The James Nelson and Anna Louise Raymond Foundation
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

NEW ZEALAND AND THE MAORIS

In the south Pacific, to the southeast of Australia, lies a group of islands known as New Zealand. There are two large islands—North Island and South Island—and several small ones near-by. All are under the control of England, but have an independent government.

New Zealand is noted for its unusually fine scenery. Tourists travel thousands of miles across the seas to enjoy its genial climate and gaze upon its majestic mountains. Many are volcanic. North Island has a famous Lake District, where geysers play, throwing their sprays high into the air. Were you in the neighborhood, you might eat food cooked in one, for so great is the heat, it is often used by the native peoples, in place of fire heat. In this region are the sulphurous springs whose waters flow into natural, hollowed rock basins, supplying warm water of a beautiful blue color for the daily bath.

It is in the geyser basins that the Moa, that gigantic bird of prehistoric days, used to roam. Today, only the Kiwi remains to represent this type of tailless, wingless birds. It is a queer little fellow about the size of a hen, and is covered with glossy, brown feathers that are so narrow they look more like hairs than the covering ordinarily seen on birds. The feathers are greatly prized by the Maoris, the people who have been living on the North Island since long before the coming of Captain Cook and his venturesome companions.

Just who the Maoris are or from what land they originally came is not known. They had no early written language, so the only method of recording historical events was for a father to tell them to his son, generation after generation. Some of those old tales tell of the ancestors who came over "the sea-roads" of "The Great Ocean of Kiwa" in huge canoes. So sacred were those canoes, they were given the powers of supernatural beings.

Maori war canoes, too, took on some of the sacred character of the boats of their ancestors, and were their most highly prized possessions. Only men of high rank were allowed to work upon them. Each had its special name, and each was shaped from one solid log by means of fire and stone or shell tools. A removable prow and stern with high ornamentation added beauty and dignity to the boats. Triangular sails of raupo leaves were used in fair weather. No cooked food was allowed in the war canoe. Sometimes, on the death of a great man his boat was set up over his grave in place of a stone marker.

When Captain Cook reached the islands, he found strong fortifications and citadels guarding the Maori strongholds, and the Maoris well-trained warriors. The ruins of the forts are still to be seen in certain areas.

When the people no longer needed sea-going canoes, they turned their artistic ability to the making and decorating of their council houses. These buildings were used for all important ceremonies and were solemnly erected with many rituals and feasts as the work progressed. No woman was permitted to enter until the building was completed. To do so would have brought misfortune upon the community. Always, the council houses were long in a north and south direction. The Maoris explained this by saying: "The ghosts won't have to cross the ridge poles in going to Hades, if they are built in this manner." The pole was considered a very important part. It was lifted at the front so the smoke would pass out through a small opening.

Villages were located in open clearings and were kept clean and neat. Around the groups of houses were fences made of large posts. There were no regular streets, and the Maoris came and went through openings in the fences. These could be closed when desired. Near the villages were the fields. The ground was loosened with a "ko." This was an implement with a step for the foot used to push the implement downward. Men, women and children worked as songs were sung. These asked the blessing of the spirits on the work of the gardeners. During the summer, the roots of ferns were gathered and stored for winter food.

Tattooing was thought to be necessary and painful was the process, but each Maori was proud of the design when completed. His tattoo marks, his jade ornaments and his beautiful feather and flax capes and kilts were all of very fine workmanship.

Such were the Maoris of the past. Today, they have adopted the customs and life of their English neighbors. They are excellent citizens. Many are sheep herders and dairy producers exporting millions of dollars worth of goods every year.

MARGARET M. CORNELL, Guide-lecturer

Note: In Hall F you will find a Maori council house and other interesting Maori exhibits.

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FIELD MUSEUM OF
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE STORY OF TEA

Tea ranks first in the world's choice of beverages. That may sound strange in America where coffee predominates, but the amount of tea consumed by the Japanese, Chinese, and Russians and the white population of the British Isles surpasses all other drinks except water.

The exact origin of the use of tea is unknown. It has been used in China for centuries. Whether it originated there or in India is undecided. One story is found in Chinese fairy tales which tells of an old man appearing to some peasants working in a field. He held in his hand a branch from a tea shrub and commanded them to make a drink from the leaves by boiling them in water.

For a time tea was used only by the priests. Later it was a favorite medicine. Some of the most beautiful buildings in China and Japan are the tea houses erected for the purpose of making a ceremony of tea drinking.

The Dutch were the first to learn of the habit in China and introduced it into Europe. There too, it was first used as a medicine. However, the people soon used it as a beverage and tea houses sprang up in all the large cities.

The great tea plantations are found in India, Ceylon, China, Formosa, Japan, Java and Sumatra. Those in India are like villages where the workers live and spend most of their time. Each family rents, for a nominal sum, a small part of the plantation. On it is a hut in which the family lives. Near-by is a strip of garden in which the man raises, during his leisure time, rice or vegetables. Perhaps a cow may also be kept.

The entire family works on the plantation. During the cold, dry seasons the tea bushes are pruned and kept in condition. The ideal shape of a tea plant is flat or saucer-shaped on top. The height should not exceed four feet. The children pull the weeds and loosen the soil under the bushes. They go to school during the day when not busy, otherwise school is held in the evening. A native doctor lives on the plantation and watches over the health of the workers.

During the warm, wet season, from April through September, the work of plucking tea leaves takes place. The first leaves picked are the finest—they are the young tender ones. The plantation is divided into sections which are plucked in rotation. Thus about every two or three weeks the leaves are plucked from a plant. While the women

are picking the leaves, the men hoe the land. Each man has so many yards to hoe a day. When he finishes he is free to go to his own plot of land and work. Usually the men hoe from seven in the morning until noon.

After the tea leaves have been weighed and credit given, they are sent to the factory. Some are spread to dry, then twisted in the rolling machine. These leaves are to be made into black tea and are allowed to ferment. Later the leaves are roasted at a high temperature until brittle. They are then ready to be sorted and packed.

In making green tea the same kind of leaf is used but the leaves are roasted immediately to seal the pores and retain the green color. Leaves for green tea are never allowed to ferment.

There are many names given to different kinds of green and black teas. Pekoe is a familiar black tea. It was so named because the leaves are of the first picking and are covered with a soft, white down, the Chinese name for which is "pecoe." Oolong is a semi-fermented tea whose name comes from an old Chinese legend that a green dragon ("ou-loung" in Chinese) coiled itself about the tea shrub whose leaves make this tea. Gunpowder is a well-known green tea as is also Hyson. A Chinese maiden, Hi-chun, so improved the method of sorting her father's tea that he named it "Hyson" in her honor. Jasmine tea is prepared with fresh jasmine blossoms scattered among the tea leaves. They add their delightful fragrance to the tea.

There are other plants whose leaves are used in making beverages similar to tea. The American Indians used the leaves of a plant belonging to the holly family for a drink. This is still rather common and is called "cassine tea." On the border of the pampas of South America grows another member of the holly family whose leaves are brewed in water, making "maté." These teas have a stimulating effect as does the real tea.

MIRIAM WOOD, Guide-lecturer

Note: Field Museum exhibits in Hall 25 the different kinds of tea. Among the Chinese and Tibetan collections in Halls 24 and 32 are teas and tea utensils.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

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FIELD MUSEUM OF
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE SLOTHS AND THEIR COUSINS

Of all the mammals, none are more peculiar in appearance than the Sloths and their cousins, the Armadillos, Anteaters, Pangolins and Aardvarks.

Long, long ago, Sloths lived in the western part of our own country. Now, they are found only in Central and South America, in tropical regions, and they are much smaller than their famous prehistoric ancestors. Armadillos and Anteaters are also found in the western hemisphere, while the Pangolins, or Scaly Anteaters, and the Aardvarks, or Earthpigs, are found in the Old World.

The scientist will tell you that these animals are Edentates. That means they are either toothless, or else they have poor, peg-like teeth which are soft and lack the hard enamel of most mammal teeth. The Edentates without teeth have tongues that are especially equipped for the securing of food.

The Sloths of today are true tree-dwellers. They are harmless little creatures spending their entire lives among the leaves. When seen they are usually hanging backs downward from the undersides of branches. Their heads are short and round and the bodies are covered with crisp, coarse hair. When the animals live in the dense forests, a tiny plant grows among the hairs, which gives them a greenish tinge, and a rolled-up animal is hard to find. Their front legs are much longer than the back and each ends in a slender foot having either two or three long, strong claws. On the ground the Sloth crawls along on the outer edge of its feet and moves with difficulty. The name "Sloth" is well-given for it is the most stupid and sluggish of animals.

Should you happen to meet an animal that looks as if some one had tried to press it between two boards, take a good look at its head and front feet. If, in proportion to its size, it has the longest skull among all mammals, and if it walks on the knuckles of its front feet, then you are making the acquaintance of the Great Anteater. It wears a magnificent coat of long, black, white and gray hairs and its tail is long and graceful. Unlike its cousin, the Sloth, the Great Anteater is a true ground animal and has no use whatever for vegetable foods. With the long, hard claws on the third toe of the front feet, it tears openings in the clay nests of the ant-like termites. As it swings the flexible, sticky tongue about, the termites are swept into the tiny mouth and then along the very long snout.

There are two other Anteaters—the Tamandua of the forests whose tail is built for clinging to the limbs—and the Little Silky Anteater which is not much larger than a rat and lives in the very hottest parts of the tropics. All the Anteaters have hair coverings, but the other three cousins have both hair and coats of armor.

The Armadillos get their name from a Spanish expression meaning "little armored one." They vary in size from the tiny, silky haired Pigmy with the shield bent across the entire hind part of the body to the Giant Armadillo which is over four feet long. The Nine-banded Armadillo ranges as far north as Oklahoma and Texas. This is the one whose shell is often used for the making of baskets. The Three-banded walks on the tips of its front toes and is the only one that can roll itself up into a ball. At first, it bends the two parts of its carapace under the body, and if further disturbed, snaps them shut with tremendous force. When rolled up the armored tail and face shield close the space between the hard coverings.

The Pangolins look as if they had stolen some pointed scales from old iron suits of knights of long ago and then fashioned them into covers for their own bodies. Some of them can climb trees. All live in burrows in the ground. When inside the animals plug up the entrances with dirt. Should a person touch a Pangolin, it would instantly make a coil of its body with the head inside. So strong are the muscles of the tail that great strength is needed to uncoil the animal when thus curved. The Pangolins have no teeth and feed on ants, termites and locusts. In China, certain parts of the body are used in the making of medicine and all species are eaten. The meat is considered a delicacy.

The Aardvarks are shaped somewhat like pigs. They too live in burrows. When attacked, they dig themselves into the ground with unbelievable rapidity, using the front legs to dig with, and the back legs to work the dirt out from under the body. Aardvarks are valuable animals as they feed upon locusts, ants, termites, beetles and grasshoppers—all of which are injurious either to crops or to objects made of wood.

MARGARET M. CORNELL, Guide-lecturer

Note: In Hall 22 is a case showing the Aardvark and its burrow, and in Hall 15 may be seen all the Sloths and the cousins.

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STEPHEN C. SIMMS, Director

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Series XXII, Number 6
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE POWHATAN INDIANS

One of the most famous stories in our American history centers about a fun-loving Indian girl known as Pocahontas. She is said to have saved the lives of Captain John Smith and other early English settlers when they aroused the anger of her father, the chief of the Powhatans. Later, she married an Englishman, went to England, and was received in London as a princess.

The Powhatans formed a strong federation of tribes living in the region extending from the Potomac River and Chesapeake Bay inland to the fall line. The word "Powhatan" comes from "pawä 'tan" which means "falls in a current of water."

When the English reached Jamestown in 1607, the tribes occupied some 200 villages. Each had from 50 to 500 families. The people lived in "wigwangs." These were made of saplings thrust into the ground in an oblong shape and bent over at the top. When these had been securely tied with root strings, or with white oak thongs, they were covered with sheets of bark. Each village also had small huts shaped like beehives. Doors and windows were simply openings, which were closed with bark shutters in stormy weather. Fires were made by turning a dry, pointed stick about in a hole in a piece of dried wood. When it ignited, tinder was added and the blaze applied to the materials in the clay fire-hole in the center of the house. Smoke passed out through an opening directly above.

The English were much surprised at the crops raised by their native neighbors. At first, they were friendly with the Indians, who supplied them with several kinds of corn, peas, melons, pumpkins, fruits and tobacco. The Indians were very fond of peaches which had been dried in the sun, and of sweet, juicy, green corn roasted in the ear before the fire. Bread was made of corn, wild oat or sunflower seed meal. No salt was used, but ashes of the hickory or of stickweed supplied the seasoning needed. Hominy was eaten by itself or cooked with fish or the flesh of animals. Barbecuing whole deer was a favorite means of celebrating a feast or ceremony.

The Powhatans believed in a great spirit known as Okee or Kiwasa. This giver of all good things was thought to dwell in the heavens above. Images of this god were placed in their burial temples. They also worshipped many forces capable of doing them harm, such as fire, water, lightning and thunder. The priests and magicians controlled the life of the community.

The divisions of the year, months and days were very interesting. If Pocahontas wished to tell that something happened at noon, she would say it occurred during "the power of the sun"; morning was "the rise of the sun"; afternoon and evening, "the lowering of the sun." Months were counted by moons. For instance, one was "the moon of stags," another, "the corn moon." We divide our year into four seasons, the Powhatans had five: the budding time; the roasting-ear time; the highest sun time; the corn harvest or fall of the leaf time, and the winter, or "cokonk time." It was then they heard the call of the wild geese. Trading and account records were kept by means of knots on a string or by notches on a stick.

Like other American Indians, they were fond of personal decorations. Copper pendants were their most prized possessions. Next came the necklaces, wristlets and kneelets of pearls, beads and shells. The usual dress of the men consisted of a fringed apron or mantle of deerskin belted at the waist. When on the warpath, their bodies were painted with designs fantastic and weird.

Pocahontas and her brothers were very straight. At birth, they had been dipped head and ears in cold water and then bound onto boards which had coverings of cotton, wool or fur. Against the board the first years were spent. Often the board was hung from the limb of a tree. When the brothers grew up, their hair was cut so as to leave a short, stiff ridge standing up on top of the head exactly like the comb on the head of a cock. Sometimes, the rest of the head was shaved, but usually the back hair was allowed to grow and fastened in a knot back of the left ear. The hair on the right side of the head was kept flat so as not to interfere when the Indian was using the bow and arrow.

From the Powhatans, the Jamestown colonists learned how to hollow out trunks of trees and make them into dugouts for fishing, and how to plant and harvest the corn and beans which have become such important foods to Americans.

MARGARET M. CORNELL, Guide-lecturer

Note: In Hall 4 may be seen many objects like those used by the Powhatans, and in Hall B is a case showing three Powhatans making stone implements.

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FIELD MUSEUM OF
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

TAPIOCA

One of the most popular desserts served in American homes is made of tapioca. The material of which this pudding is made comes from the roots of a native South American plant known as "manioc" which looks like a scraggly castor bean plant.

When the Portuguese first visited that land, in the early sixteenth century, they found manioc growing wild. In some areas, the natives had transplanted the plants and were cultivating them in their gardens, with almost no effort.

The Portuguese had never seen or heard of such plants, and were curiously interested in watching the women as they prepared the manioc foods. They saw that plants a year or two old were cut down close to the ground, then the roots were dug up carefully. Sometimes, the women simply dried these roots in the sun and then boiled them or baked them as vegetables. More often, however, they cut the roots into small slices, which they mashed into a juicy pulp and pressed in long, slender baskets. These baskets were loosely woven and were made especially for this starch pulp. Thus the juice oozed out leaving only a starchy mass to dry in the sun.

The dried pulp did not look particularly appetizing to the newcomers, but they watched closely the next step. This time the women washed the mass carefully and when clean the starch settled to the bottom and the water was poured off. The starch was called "cassava." It was sometimes made into cakes but was usually eaten dry as "farinha." They sprinkled it on their food, stirred it into a cup of water or just ate it with their fingers. To their surprise, the Portuguese found the food made of the starch very good to eat and decided to introduce this important new plant into Europe.

They carefully transported some of the stems and a few of the entire plants. To their amazement, the new plants immediately grew with very little extra care. In time, many countries having climates suitable to the development of the manioc had plantations of this new starch producing plant. Today millions of people of tropical lands depend upon this plant for their chief food. It is just as necessary to them, as potatoes in our own land.

The juice left from the making of the starch is poisonous, but it is not thrown away. Instead it is boiled until the poisonous effect is destroyed. The liquid is then ready to be made into a thick sauce, "cassereep," which is considered a great delicacy.

Not only is the starch used, but a drink called "mazato" can be made from the roots. The making of this liquor is an occasion for merriment and gossip. As the women visit, they break the manioc roots into small pieces, then mash them and mix them with water. The mixture is then placed in sealed, earthen jars and buried in the ground for two or three weeks. After it becomes fermented, it is considered a delicious beverage.

Java now raises many manioc plants. Much of the starch from these plants is made into tapioca. In fact, a great amount of the tapioca used in the world comes from Java.

The plantations on which the manioc is grown are great centers of activity. Like the coffee and rubber plantations, thousands of natives are engaged in caring for the plants and in preparing the products for exporting.

Some of the largest roots are too coarse to be used for the making of starch so they are ground up with other waste materials from the plants and made into a kind of meal for cattle food. It is said to make excellent food and to be used extensively along the Pacific coast of both Americas.

The next time you have tapioca pudding for dinner, just remember that the root of the manioc furnishes that product and also that millions of people in tropical lands enjoy it as much as you do.

MIRIAM WOOD, Guide-lecturer

Note: In Hall 29 may be seen an entire manioc plant, bits of the root cut and some cakes made from the starch. The same case contains a castor bean plant, which is a cousin of the manioc. Hall 9 has interesting baskets, strainers and other objects used in the preparation of manioc or cassava foods.

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STEPHEN C. SIMMS, Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
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FIELD MUSEUM OF
NATURAL HISTORY

Series XXII, Number 8
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FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

SOME INTERESTING BEACH AND SEA ANIMALS

The sea-beach with its stretches of sand and its water-worn rocks is a most interesting area to study, especially just after a great breaker has rolled in from the sea.

As the water slips back to the deeper mass from which it came, bubbles burst in the wet sand giving away the secret hiding place to which some shelled creature has hurried, and suddenly, a jet of water spurts into the air, as if the clam beneath wished to make his presence known. Near-by deep grooves in the sand show where some inhabitant of the beach left his footprint as he searched for food in the water just receding. Or, perhaps, a tube projects from the wet sand with its sides decorated with bits of seaweed and shells. It is the upper end of a worm tube, and only the keenest of eyes will be able to catch a glimpse of the builder of this exquisite structure before it disappears below. The body is covered with plumes and has a lovely opal-like coloring. The lower part of the burrow ends in the region where the sand dollar lives.

An old boat hull on the beach may have been filled with plants and animals and it is here we look for the brown lacey algae with tiny sponges and corals lurking underneath, and sea spiders scurrying in the search for fresh food bits. On the outside, barnacles cling tightly to the old planks. When the boat is under water during the rise of the waves, these odd little fellows wave their delicate feather-feet about and secure the minute particles on which they feed.

Everywhere are crabs and shells with all the colors of the rainbow imprisoned in the lining of their hard coverings. A cavity on a rock will disclose starfish in their gay colors, while a short distance away are queer egg cases of other dwellers of the sea. The "Devil's Pocket Book" is brown and leathery with four long tentacles at the corners. This is the case in which the skate, a member of the ray family, deposits its eggs.

After a storm, the shores are littered with animals very different from those found on the beach all the time. There are apt to be jelly-fishes and those odd animals known as sea-cucumbers and a Portuguese man-of-war.

Sea-cucumbers are usually shaped like the vegetable from which they get their name, but they have the power of changing the shape. They may be like little globes or again they may stretch out into

pencil-like forms. These strange creatures can also turn themselves inside out when trying to escape from an enemy. They have tube feet and when these are drawn in the animals look like fat, little worms. About the mouth are tentacles which serve as organs of touch and smell. The sea-cucumbers often reach a length of fifteen inches. In getting from place to place they walk or push themselves forward by means of the powerful muscles in the body, just as worms do.

The Portuguese man-of-war is really a community of animals living together. It can be recognized by its float. This is a long, pear-shaped bag filled with air, which rests on the surface of the sea. The color of this float is bright blue, and rising from the upper side is a crest which acts as a sail. Hanging from the underside are streamers or tentacles well supplied with stinging cells, and other tentacles which are used for bringing the food to the mouth. When the wind is strong, the tentacles stretch out to a length of forty or more feet and help to keep the sail before the wind. They also act as anchors and prevent the float from being carried to land.

The jellyfish are perhaps the most interesting of all sea animals. They always create a thrill when seen forcing themselves gracefully through the water, or when they lie on the surface sunning themselves during the hottest part of the day. They look very much like masses of gelatine, are of many bright colors, but are not fish at all. Attached to the margin of an umbrella-like body are tentacles. Some jellyfish walk on their tentacles at full length, while others turn up the ends and walk on the joints. About the mouth are frills. These and some of the tentacles are equipped with stinging and poison cells. Occasionally, tiny fish are able to slip between these, and there protected from the ogres of the sea, they live safe lives, feeding upon the tiny particles in the water that flows in and out of the tentacles. The bodies of jellyfish are chiefly water, so soon after one has been cast upon the shore it disappears.

Thus we see that the beach and the mother sea have their own types of animal life, all provided with organs that fit them for the kind of life they must lead.

MARGARET M. CORNELL, Guide-lecturer

Note: In the Main Hall, is a case showing many of the fascinating forms of life to be seen along the beach and in the waters of the sea.

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FIELD MUSEUM OF
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FIELD MUSEUM OF NATURAL HISTORY
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CHICAGO

THE GIRAFFE

Giraffes at present are found only in Africa, and even there they are becoming scarcer as a result of being hunted. One million and more years ago they lived in southern Europe and much of southern Asia. Fossil bones have been found in Greece, Persia, China, and other countries.

In the earliest days of Egyptian history the giraffe no doubt lived in the jungles of that country. After it had disappeared from Egypt tame specimens were often sent there from the south. Later giraffes were sent to Rome where they marched in the triumphal processions and were shown in the circus games. During the Christian era giraffes were sent at various times by Arab traders to Europe as well as to Persia, India, and China.

People have always regarded these strange animals with great interest just as we do when we see them in circuses and zoological gardens. Carvings of them were made by negroes of long ago on rocks in different parts of Africa. The great interest in giraffes is due, in part, to their fantastic form. The height may be as much as eighteen and one-half feet. The body, however, is short, and the back slopes gradually downward from the neck. The front legs are not as much longer than the hind legs as they appear to be (about seven inches). The neck bears a short mane. Also of interest is the fact that giraffes are so seldom heard uttering sounds that many people believe them to be voiceless.

At short distances the brilliant reddish brown and white markings make the animals very noticeable, although from a distance giraffes are said to be difficult to distinguish when standing quietly among tall trees. In different parts of Africa the coloring of giraffes varies slightly as does the shape of the reddish brown markings. The reddish brown coloring is in the form of spots which may be almost round or very irregular in shape. One variety, known as the Reticulated Giraffe, is named after the net-work arrangement of the markings.

The horns, which may be present in both sexes, or only in the males, are usually two in number and they are located on the top of the head. A third, shorter horn, if present, is located in the middle of the forehead.

In some instances an additional pair of poorly developed horns grows at the rear of the skull. Giraffe horns are very short and they are covered with skin although a few are bare at the very tip.

The great height of the giraffe is an advantage to it when feeding, for it lives almost entirely on leaves and shoots. The long, flexible tongue aided by the protruding lips is used for gathering the food. The thick skin of the tongue and dense velvety hair on the lips are a protection against thorn pricks. As an additional protection against thorn pricks and blowing sand the giraffe, like the camel, is able to close its nostrils tightly at will.

The long front legs and neck of a giraffe make it difficult for the animal to reach the ground; to do so it must spread the front legs far apart. This is rarely done, however, for giraffes do not eat from the ground, and they are seldom seen to drink. Some live in parts of Africa where water is not to be found; in fact, the Bushmen believe that giraffes do not drink at all.

In the open brush country, which giraffes prefer, they associate in herds numbering from six or seven to as many as forty or fifty. Because of their great height, keen sight, and well developed sense of smell they are difficult to approach. At a sign of danger they gallop away; their only other gait is a walk.

When a giraffe is fleeing from danger it can go through dense scrub jungles, for its thick skin protects it from the thorns. The tough hide, which is about one inch in thickness, is extensively used for whips by the Boers and for sandals by the natives. The long hairs from the tails are much in demand for ornaments, and the meat is a very desirable food. As a consequence many giraffes are being killed and in regions where they are not protected they are becoming scarcer year by year.

FRANKLIN C. POTTER, Guide-lecturer

Note: The African Water-Hole group in Hall 22 contains five Reticulated Giraffes. In Hall 19 is the skeleton of a giraffe. In the South Gallery on the second floor there is a Chinese painting of a giraffe made in the year 1485.

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